Our Case No. 10932/162

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)

Thyssen et al.   )

Serial No.   To be assigned   )   Examiner: To be assigned

Filing Date: Herewith   )   Group Art Unit No.: To be assigned

For   SILENCE DESCRIPTION CODING   )
      FOR MULTI-RATE SPEECH   )
      CODECS   )

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231
BOX: PRELIMINARY AMENDMENT

Dear Sir:

In response to the Notice of Allowance mailed January 29, 2001, please enter this continuation application and this preliminary amendment in the above captioned application as set forth below.

IN THE CLAIMS:

Please add the following claims:

21. A communication device having a multi-rate speech coder that performs silence description coding of a speech signal having varying characteristics, comprising:

a voice activity detection circuit that is capable of identifying a substantially speech-like characteristic of a segment of the speech signal; and

a processing circuit communicatively coupled to the voice activity detection circuit, the processing circuit being capable of selectively applying one of a plurality of coding modes to the segment of the speech signal,

wherein the plurality of coding modes comprises a plurality of speech coding modes and a silence description coding mode,

wherein the processing circuit selects the silence description coding mode upon the identification of the absence of a substantially speech-like characteristic of the segment of the speech signal independent of the speech coding mode applied before the segment.

22. The communication device of claim 21, wherein the communication device comprises a wireless communication device.

23. The communication device of claim 22, wherein the wireless communication device comprises a telephone.

24. The communication device of claim 23, wherein the telephone comprises a cellular telephone.

25. The communication device of claim 21, wherein the communication device comprises a handheld wireless communication device.

26. The communication device of claim 21, wherein the communication device comprises a computer network-based communication device.

27. The communication device of claim 26, wherein the computer network-based communication device is capable of communicating via an internet-based network.

28. The communication device of claim 26, wherein the computer network-based communication device is capable of transmitting an encoded speech signal via the internet-based network.

29. The communication device of claim 21, wherein the communication device is capable of communicating via a computer network and telephone network.

30. The communication device of claim 29, wherein the telephone network is a cellular telephone network.

31. The communication device of claim 21, wherein the communication device comprises a data processor.

32. The communication device of claim 21, wherein the communication device comprises a network interface device that is capable of interfacing a cellular telephone to a computer network.

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33. The communication device of claim 21, wherein the processing circuit selects a discontinuous transmission mode after the silence description coding mode.

34. A method of coding a speech signal, comprising:

coding the first segment of the speech signal using a speech coding mode selected from a plurality of speech coding modes;

coding the second segment of the speech signal using a silence description coding mode independent of the speech coding mode used to code the first segment of the speech signal.

35. The method of claim 34, further comprising:

transmitting the coded first and second segments of the speech signal.

36. The method of claim 35, further comprising:

transmitting an error checking signal with the coded second segment of the speech signal.

37. The method of claim 36, wherein the transmitting the error checking signal comprises transmitting redundant data.

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38. A communication system, comprising:

a coder;

a decoder; and

a communication network selectively interconnecting the coder and the decoder;

wherein the coder comprises a voice activity detector, a processor coupled with the voice activity detector, and a transmitter coupled with the processor,

wherein the voice activity detector receives first and second segments of a speech signal and identifies a substantially speech-like characteristic of the first and second segments,

wherein the processor selectively applies one of a plurality of coding modes to the first and second segments, the plurality of coding modes comprises a plurality of speech coding modes and a silence description coding mode,

wherein the processor applies the silence description coding mode to the second segment of the speech signal after the voice activity detector identifies an absence of a substantially speech-like characteristic of the second segment of the speech signal independent of the speech coding mode applied to the first segment of the speech signal.

39. The communication system of claim 38, wherein the decoder generates a reproduced speech signal that is substantially imperceptible from the first and second segments of the speech signal.

40. The communication system of claim 39, wherein the coder selects a discontinuous transmission mode after the silence description coding mode.

41. The communication system of claim 39, wherein the communication network comprises a wireless communication network.

42. The communication system of claim 39, wherein the communication network comprises a computer network.

43. The communication system of claim 42, wherein the computer network comprises a local area network.

44. The communication system of claim 42, wherein the communication network further comprises a wireline communication network connected with the computer network.

45. The communication system of claim 44, wherein the communication network further comprises a wireless communication network interconnected with the wireline communication network and the computer network.

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46. A multi-rate codec that encodes a first speech signal having a first plurality of segments and receives a second speech signal having a second plurality of encoded segments, comprising:

a multi-rate coder, wherein the multi-rate coder is capable of coding each of the segments of the first speech signal via one of a plurality of speech coding modes and a silence description coding mode, wherein the multi-rate coder selects the silence description coding mode when an absence of a substantially speech-like characteristic is detected in a segment independent of the speech coding mode applied to an earlier segment; and

a multi-rate decoder operatively coupled to the multi-rate coder, wherein the multi-rate decoder is capable of receiving and decoding the second plurality of encoded segments, wherein the multi-rate decoder selectively adds comfort noise to the decoded segments.

47. The multi-rate codec of claim 46, further comprising an error checking mechanism that reduces erroneous transmission by transmitting redundant data and performing majority voting on the redundant data.

48. The multi-rate codec of claim 47, wherein the multi-rate codec transmits the redundant data when the first speech signal is being coded with the silence description coding mode.

49. The multi-rate codec of claim 48, wherein the amount of the redundant data transmitted is a function of an available communication bandwidth.

50. The multi-rate codec of claim 49, wherein the multi-rate coder comprises a perceptual weighting filter.

51. The multi-rate codec of claim 46, wherein the multi-rate coder selects a speech coding mode from the plurality of speech coding modes as a function of a power consumption level associated with each speech coding mode.

52. The multi-rate codec of claim 46, wherein the multi-rate coder selects a speech coding mode from the plurality of speech coding modes as a function of a electromagnetic interference level associated with each speech coding mode.

53. The multi-rate codec of claim 46, wherein the multi-rate coder selects a speech coding mode from the plurality of speech coding modes as a function of a radio frequency interference level associated with each speech coding mode.
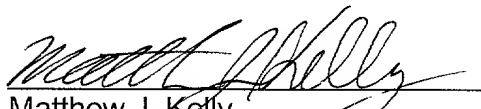
Please delete claims 1-20.

A. REMARKS

After this Preliminary Amendment is entered, claims 21-40 are in the case.

Support for the above claims can be found in the originally filed specifications and the

figures. Specifically, support for a network-based codec can be found at line 15, page

10 - line 18, page 14 and in Figures 2-4. Support for a speech codec that includes a

data processor that has a memory for storing the speech can be found at line 21, page

12 and line 4, page 13 and in Figure 3. Applicants believe that the claimed invention is

in proper form for allowance and request allowance of all claims.

B. CONCLUSION

The Applicants request the preliminary amendment be entered. The Examiner is

encouraged to contact the undersigned at the telephone number indicated below if

further clarification is desired.

Respectfully submitted,

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